

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
23 March 2023 (23.03.2023)



(10) International Publication Number
WO 2023/043374 A3

(51) International Patent Classification:
B01D 53/62 (2006.01) **B01D 69/14** (2006.01)
B01D 53/06 (2006.01)

(21) International Application Number:
PCT/SG2022/050660

(22) International Filing Date:
15 September 2022 (15.09.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10202110219R 16 September 2021 (16.09.2021) SG

(71) Applicant: **SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN** [SG/SG]; 8 Somapah Road, Singapore 487372 (SG).

(72) Inventors: **TAN, Mei Chee**; c/o Singapore University of Technology and Design, 8 Somapah Road, Singapore 487372 (SG). **LOW, Hong Yee**; c/o Singapore University of Technology and Design, 8 Somapah Road, Singapore 487372 (SG). **WIRAWAN, Daniel**; c/o Singapore University of Technology and Design, 8 Somapah Road, Singapore 487372 (SG). **PEK, Anaqi**; c/o Singapore University of Technology and Design, 8 Somapah Road, Singapore 487372 (SG). **LAI, Jian Ting**; c/o Singapore University of Technology and Design, 8 Somapah Road, Singapore 487372 (SG).

(74) Agent: **OWEN, Samuel Man Hon**; Marks & Clerk Singapore LLP, Tanjong Pagar Post Office, P O Box 636, Singapore 910816 (SG).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,

(54) Title: CARBON CAPTURE DEVICE AND A METHOD OF USING THE CARBON CAPTURE DEVICE FOR CARBON CAPTURE

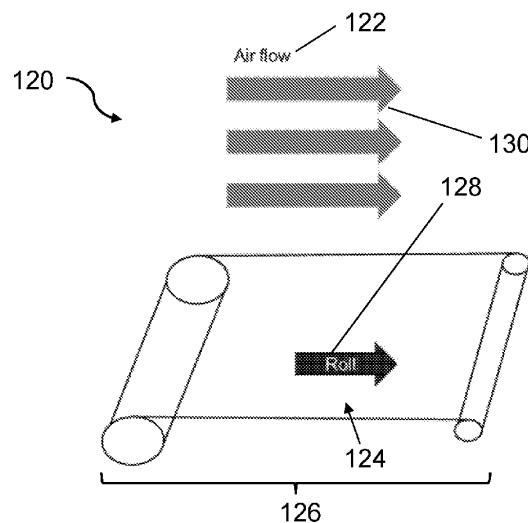


Figure 1B

(57) Abstract: A carbon capture device is described. The carbon capture device comprises a carbon capture film for capturing carbon dioxide; and an exposure mechanism for exposing a portion of the carbon capture film to a surrounding environment for capturing carbon dioxide. The exposure mechanism comprises a receiver for receiving an exposed portion of the carbon capture film and a storage for holding an unexposed portion of the carbon capture film, wherein the receiver is adapted to be connected to a portion of a leading end of the carbon capture film and to convey the unexposed portion of the carbon capture film from the storage to the receiver for exposing the portion of the carbon capture film to the surrounding environment. A method of using the carbon capture device for carbon capture is also described.

[Continued on next page]

WO 2023/043374 A3

DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE,
KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU,
LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

- (84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

20 April 2023 (20.04.2023)